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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,893	12/29/2000	Robert Palifka	09991-014001	6685

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EXAMINER	
NGHIEM, MICHAEL P	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/749,893	PALIFKA ET AL.	
	Examiner	Art Unit	
	Michael P. Nghiem	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-33,35-45,48,50-52,54-58,60,61,63-100 and 102-109* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *45,48,50-52,54-58,60,61,63-65,85-99,102,104 and 105* is/are allowed.

6)☒ Claim(s) *29-33,35-39,43,44,66-78,82-84,100,103 and 106-109* is/are rejected.

7)☒ Claim(s) *40-42 and 79-81* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The Amendment filed on March 20, 2006 has been acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 33 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the

claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 33 recites the broad recitation "thickness between 1 micron and 150 microns", and the claim also recites "thickness between 10 micron and 125 microns" which is the narrower statement of the range/limitation. Likewise, claim 35 recites the broad recitation "thickness between 1 micron and 150 microns", and the claim also recites "thickness between 20 micron and 50 microns" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 44, 66-72, 76-78, 100, 108, and 109 are rejected under 35 U.S.C. 102(e) as being anticipated by Shigemura (US 6,361,151).

Regarding claims 44 and 100, Shigemura discloses a method and apparatus of manufacturing an ink jet printing module (ink jet recording head, Abstract, line 1) comprising:

- providing a thermoplastic bonding component (thermoplastic adhesive, column 7, lines 14-16) having a plurality of openings (the thermoplastic layer between 11 and 8 has holes to match the ink channels of 11, Fig. 13 and nozzles of 7, Fig. 14);

- contacting the thermoplastic bonding component having a plurality of openings with a first component (11, side of 11 facing 7, Fig. 2) of an ink jet printing module (column 7, lines 14-16);

- heating a surface of the first component (surface of 11 facing 7) to bond the surface to the thermoplastic bonding component (thermoplastic adhesive between 11, Fig. 13, and 7, Fig. 14, also see Fig. 2).

Regarding claim 66, Shigemura discloses applying pressure to the surface and the thermoplastic bonding component (pressure applied by the surfaces of 7 and 11 on the thermoplastic adhesive).

Regarding claim 67, Shigemura discloses that pressure is applied during heating component (pressure applied by the surfaces of 7 and 11 on the thermoplastic adhesive during heating).

Regarding claim 68, Shigemura discloses that the surface and the thermoplastic bonding component are substantially free of liquid adhesive prior to contacting the surface to the thermoplastic bonding component (inherently, prior to thermal bonding, the surface of 11 is free of thermoplastic adhesive and the thermoplastic adhesive has not yet been heated, thus, is not in the liquid form).

Regarding claim 69, Shigemura discloses contacting a second component (7) of the ink jet printing module having a surface (surface of 7) with the thermoplastic bonding component (Figs. 14, 16); and heating the surface to bond the surface to the thermoplastic bonding component (column 7, lines 14-16).

Regarding claim 70, Shigemura discloses that the first component of the ink jet printing module is a piezoelectric element (piezoelectric element 11).

Regarding claim 71, Shigemura discloses that the thermoplastic bonding component includes an electrode pattern (electrode pattern formed on ink channels extend toward the thermoplastic adhesive between nozzle plate and piezoelectric element, Fig. 7).

Regarding claim 72, Shigemura discloses that the piezoelectric element is lead zirconium titanate (pzt, column 6, lines 4-6).

Regarding claim 76, Shigemura discloses that the thermoplastic bonding component includes an adhesive polyimide (column 7, line 14).

Regarding claim 77, Shigemura discloses that the ink jet printing module includes an ink channel (Fig. 7), a piezoelectric element being positioned to subject ink within the channel to jetting pressure (Figs. 5, 6), and electrical contacts (electrodes) arranged for activation of the piezoelectric element (column 2, lines 47-50).

Regarding claim 78, Shigemura discloses that the ink jet printing module includes a series of channels (Fig. 7).

Regarding claim 100, Shigemura further discloses a piezoelectric element including lead zirconium titanate (pzt, column 6, lines 4-6).

Regarding claims 108 and 109 (107), Shigemura further discloses that the thermoplastic bonding component is a solid (after thermoplastic adhesive is cooled down).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 29-33, 36-39, 73-75, 103, 106, and 107 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shigemura in view of Moynihan et al. (US 6,755,511).

Shigemura discloses all the claimed limitations as discussed above except:

- regarding claims 29 and 73, and the thermoplastic bonding component has a thickness between 1 micron and 150 microns.
- regarding claims 33 and 74, and the thermoplastic bonding component has a thickness between 10 micron and 125 microns.
- regarding claims 75, 103, and 106, and the thermoplastic bonding component has a thickness between 20 micron and 50 microns.

Nevertheless, Moynihan et al. discloses that a bonding component has a thickness between 10 micron and 125 microns and between 1 and 150 microns (15 microns, column 5, lines 64-67) for the purpose of effectively bonding a piezoelectric element (column 3, lines 2-3).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Shigemura with the thickness of the bonding

component as disclosed by Moynihan et al. for the purpose of effectively bonding a piezoelectric element.

Further, even though Shigemura does not disclose that the thermoplastic bonding component has a thickness of between 20 micron and 50 microns, it is obvious to modify the range of thickness of the thermoplastic bonding component in order to obtain an optimum effective bonding. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.*

Claims 82-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shigemura in view of DeYoung et al. (US 4,751,774).

Shigemura discloses all the claimed limitations as discussed above except:
- regarding claim 82, adhering a protector strip over the orifice plate.
- regarding claims 83 and 84, a thermoplastic bonding material adjacent to the protector strip or the orifice plate.

Nevertheless, DeYoung et al. discloses adhering a protector strip (44) over the orifice plate (42) for the purpose of protecting the orifices (Fig. 6). It would be obvious to use a thermoplastic adhesive for the purpose of effectively bonding the protector strip to the orifice plate.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Shigemura with adhering a protector strip over the orifice plate as disclosed by DeYoung et al. and using a thermoplastic adhesive for the purposes of protecting the orifices and effectively bonding the protector strip to the orifice plate.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shigemura in view of Moynihan et al. as applied to claim 29 above, and further in view of the following.

Shigemura **as modified** by Moynihan et al. discloses all the claimed limitations as discussed above except the thermoplastic bonding component has a thickness between 20 micron and 50 microns.

Nevertheless, even though Shigemura as modified does not disclose that the thermoplastic bonding component has a thickness of between 20 micron and 50 microns, it is obvious to modify the range of thickness of the thermoplastic bonding component in order to obtain an optimum effective bonding. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum ranges involves only routine skill in the art. *In re Aller, 105 USPQ 233.*

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shigemura in view of Moynihan et al. as applied to claim 29 above, and further in view of DeYoung et al..

Shigemura **as modified** by Moynihan et al. discloses all the claimed limitations as discussed above except a protector strip adhered to the orifice plate.

Nevertheless, DeYoung et al. discloses a protector strip (44) adhered to the orifice plate (42) for the purpose of protecting the orifices (Fig. 6).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Shigemura as modified with adhering a protector strip to the orifice plate as disclosed by DeYoung et al. for the purpose of protecting the orifices.

Allowable Subject Matter

Claims 40-42, 79-81, and 86 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 45, 48, 50-52, 54-58, 60, 61, 63-65, 85-99, 102, 104, and 105 are allowed.

Reasons for Allowance

The combination as claimed wherein the thermoplastic bonding component includes a filter (claims 40, 45, 52, 79, 102, 104) is not disclosed, suggested, or made obvious by the prior art of record.

Response to Arguments

Applicant's arguments filed March 20, 2006 have been fully considered but they are not persuasive.

With respect to the 35 USC 102/103 rejections, Applicants argue that Shigemura does not describe contacting the thermoplastic bonding component having a plurality of openings with a first component of an ink jet printing module. The thermoplastic adhesives does not have holes until after the thermoplastic adhesive contacts the ink channels.

Examiner's position is that Shigemura describes contacting the thermoplastic bonding component (thermoplastic adhesive, column 7, lines 14-16) having a plurality of

openings (thermoplastic layer between 11 and 8 has holes to match the ink channels of 11, Fig. 13 and nozzles of 7, Fig. 14) with a first component (11, side of 11 facing 7) of an ink jet printing module (Figs. 2, 13, 14). It is noted that the thermoplastic adhesives having holes before the thermoplastic adhesive contacts the ink channels is not recited in the claims.

Applicants further argue that Moynihan teaches away from a thickness greater than 15 microns so that the epoxy does not act like an insulator.

Examiner's position is that Moynihan discloses that "the thickness of the epoxy in other places will depend on surface variations of the flex print and the piezoelectric element" (column 6, lines 3-5). Thus, Moynihan suggests that the thickness can be greater than 15 microns depending on surface variations.

Applicants further argue that Moynihan discloses an epoxy layer which is not the same as a thermoplastic bonding component.

Examiner's position is that the epoxy layer is similar to the thermoplastic bonding component in the sense that they are both thermo-bonding materials.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (571) 272-2277. The examiner can normally be reached on M-H.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MICHAEL NGHIEM
PRIMARY EXAMINER

Michael Nghiem

May 31, 2006